CLAIMS

What is claimed is:

1. A pair of nucleic acid probes of comparable size, each preferably being from 1 to 100 kb, more preferably each being from 1 to 10 kb, or 7 to 15 kb, or 10 to 20 kb, or 10 to 30 kb, or 20 to 40 kb, or 30 to 50 kb, or 40 to 60 kb, or 50 to 70 kb, or 60 to 80 kb, or 70 to 90 kb, or 80 to 100 kb, and flanking a potential breakpoint in a chromosome, each probe being labelled with at least one different reporter molecule.

2. A pair of nucleic acid probes of comparable size, each preferably being from 1 to 100 kb, more preferably each being from 1 to 10 kb, or 7 to 15 kb, or 10 to 20 kb, or 10 to 30 kb, or 20 to 40 kb, or 30 to 50 kb, or 40 to 60 kb, or 50 to 70 kb, or 60 to 80 kb, or 70 to 90 kb, or 80 to 100 kb, and flanking a potential breakpoint in a chromosome, which probes hybridise to said nucleic acid molecule at a genomic distance of no more than 100 kb, but preferably no more than 50 kb.

3. A pair of nucleic acid probes or comparable size according to claim 1 which probes hybridise to said nucleic acid molecule at a genomic distance of no more than 100 kb, but preferably no more than 50 kb.

4. A pair of nucleic acid probes according to anyone of claims 1 to 3 each being labelled directly or indirectly with at least one reporter molecule.

5. A pair of nucleic acid probes according to claim 4 wherein the reporter molecule is selected from the group consisting of enzymes, chromophores, fluorochromes, haptens (such as biotin or digoxygenin).

6. A pair of nucleic acid probes according to any of claims 1 to 5 characterized in that probes hybridise to a single corresponding.nucleic acid molecule.

7. A pair of nucleic acid probes according to claim 6 wherein the corresponding nucleic acid molecule is at least a fragment of a chromosome.

8. A pair of nucleic acid probes according to claim 7 wherein the chromosome is not aberrant.

9. A pair of nucleic acid probes according to any of claims 1 to 8 which hybridise *in situ*.

10. A pair of nucleic acid probes according to any of the claims above which probes each hybridise *in situ* under low-stringent conditions to only a few linear DNA molecules per cell.

11. Use of a pair of nucleic acid probes according to any of claims 1 to 10 for the detection of a nucleic acid molecule comprising a chromosome aberration.

12. Use of a pair of nucleic acid probes according to any of claims 1 to 10 for the detection of cells comprising a chromosome aberration.

13. Use of a pair of nucleic acid probes according to any of claims 1 to 10 for the detection of a disorder or disease caused by a chromosome aberration.

14. Use of a pair of nucleic acid probes according to any of claims 11 to 13 wherein the chromosome aberration is related to a malignancy.

15. Use of a pair of nucleic acid probes according to any of claims 13 to 12 wherein the chromosome aberration is related to a hematopoietic malignancy.

16. A diagnostic kit comprising at least a pair of nucleic acid probes according to any of claims 1 to 10.